

ABSTRACT

The present invention is a low temperature (below about 60°C.) anodizing electrolyte composition for valve metals including, and not limited to, aluminum, niobium, titanium, tantalum, zirconium, and alloys thereof. The low temperature anodizing electrolyte composition contains at least: (1) a protic solvent selected from the group consisting of alkylene glycols, polyalkylene glycols, and their mono ethers, and (2) a weak inorganic or organic acid or its salt. The present invention is capable of anodizing valve metals for high voltage capacitors of greater than 300 Volts with: (1) little to no gray-out at high formation voltage, (2) high formation breakdown voltage, and (3) high quality of oxide with low DC leakage and stable long term performance of the anode.